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1/4

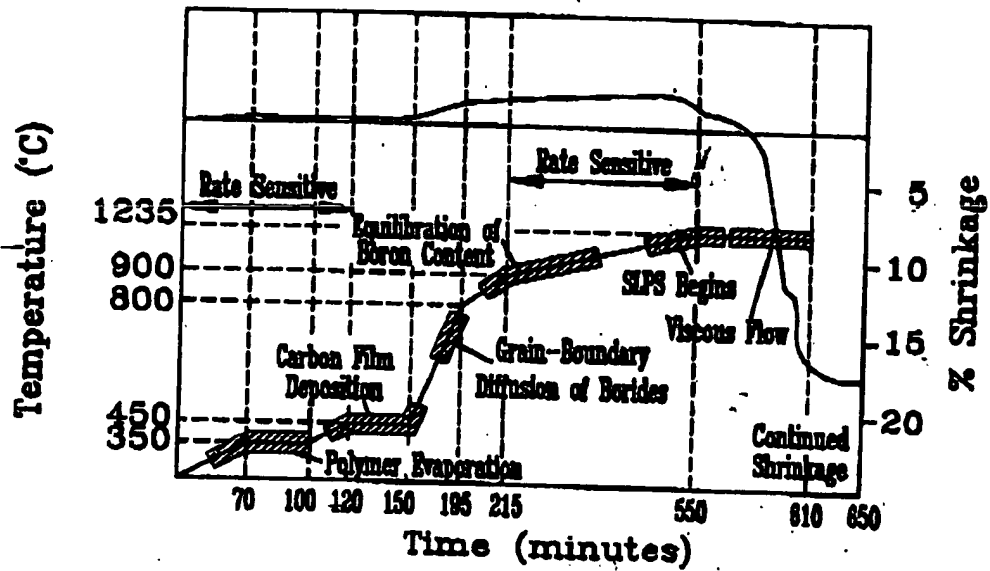


FIG 1

PRIOR ART

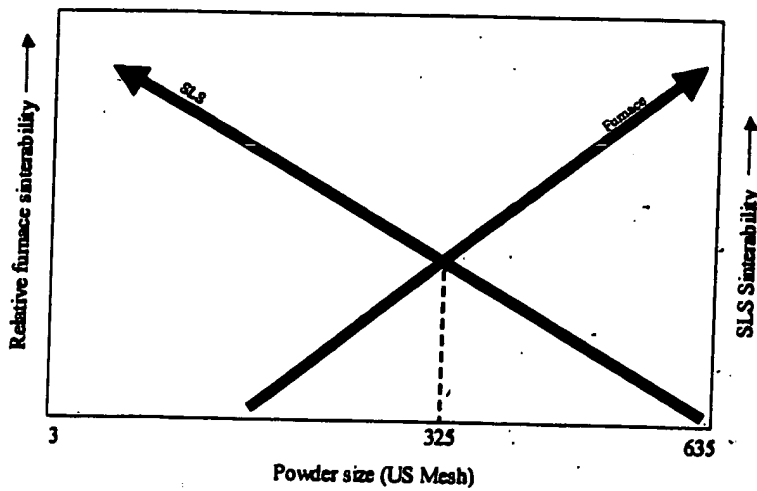


FIG 2 Powder size vs SLS and furnace sinterability

	Metal powder size distribution		Metal and binder powders blend			
	Total wt %	Size micron	Non Borided wt %	Borided wt %	Nylon 12 wt %	BMI wt %
Original	55	-88 to +44	90	10	3	0.5
	45	-44				
New	100	-44	85	15	0.5	0.5

FIG 3

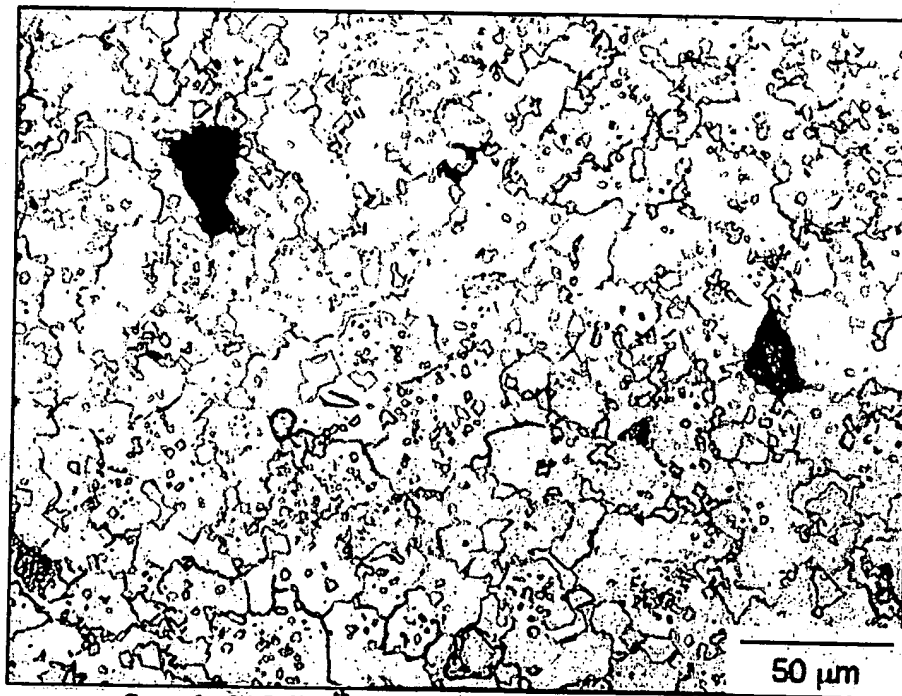


FIG 4 Sample 215-3, 6th sintering run, sintering temperature 2255°F, etched, optical, bright field image, ~400x

Parameters/Trial	6
Material (%-% by wt.)	Alloy230+B (85-15)
Binder (% by wt.)	0.5% N-12
BMI (% by wt.)	0.5% BMI
Powder Distribution (μm)	-44
Debind Cycle	
Ramp Rate ($^{\circ}\text{F}/\text{min}$)	2
Hold Temp ($^{\circ}\text{F}$)	1652
Hold Time (min)	15
Pressure (torr)	700
Gas	Ar
Sinter Cycle	
Ramp Rate ($^{\circ}\text{F}/\text{min}$)	1
Hold Temp ($^{\circ}\text{F}$)	2255
Hold Time (min)	10
Pressure (torr)	300
Gas	5%H₂-95%Ar

FIG. 6

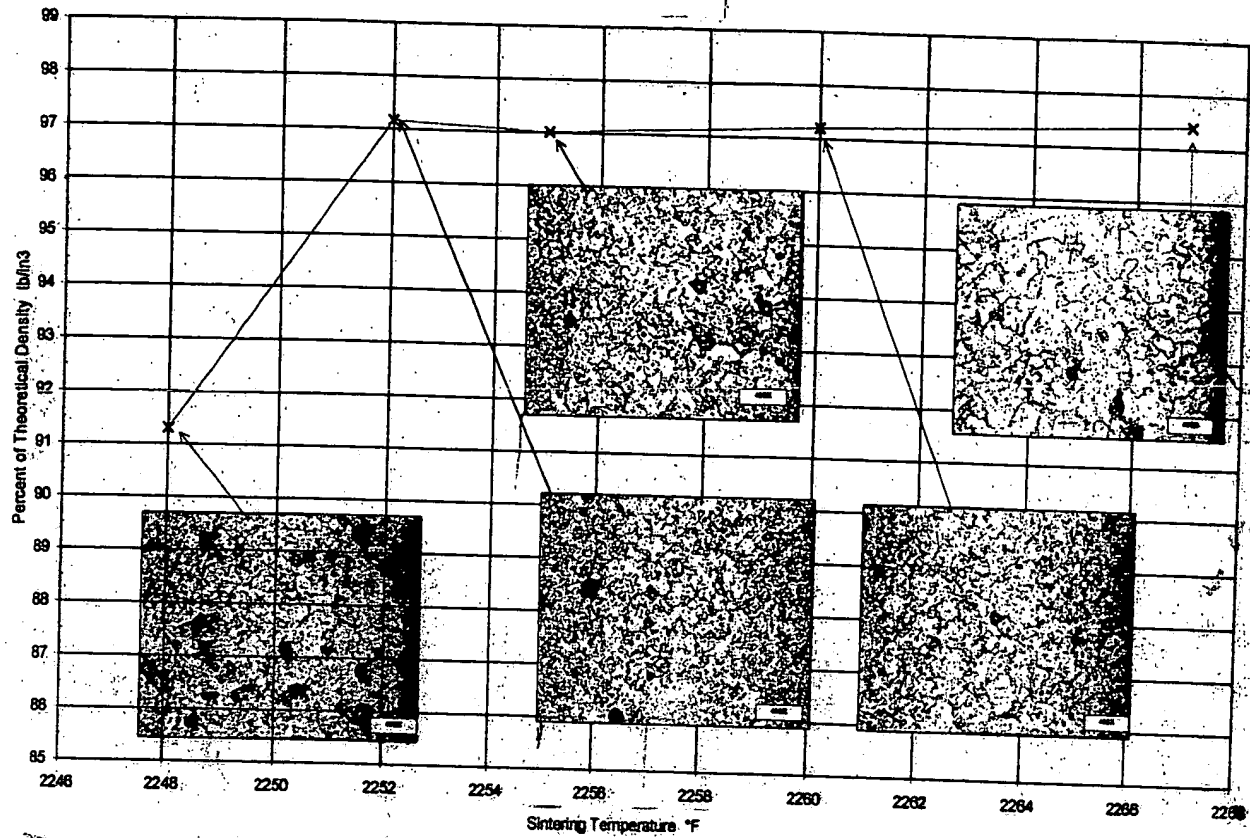


FIG. 5 Plot of sintering temperature vs. density and resulting microstructures

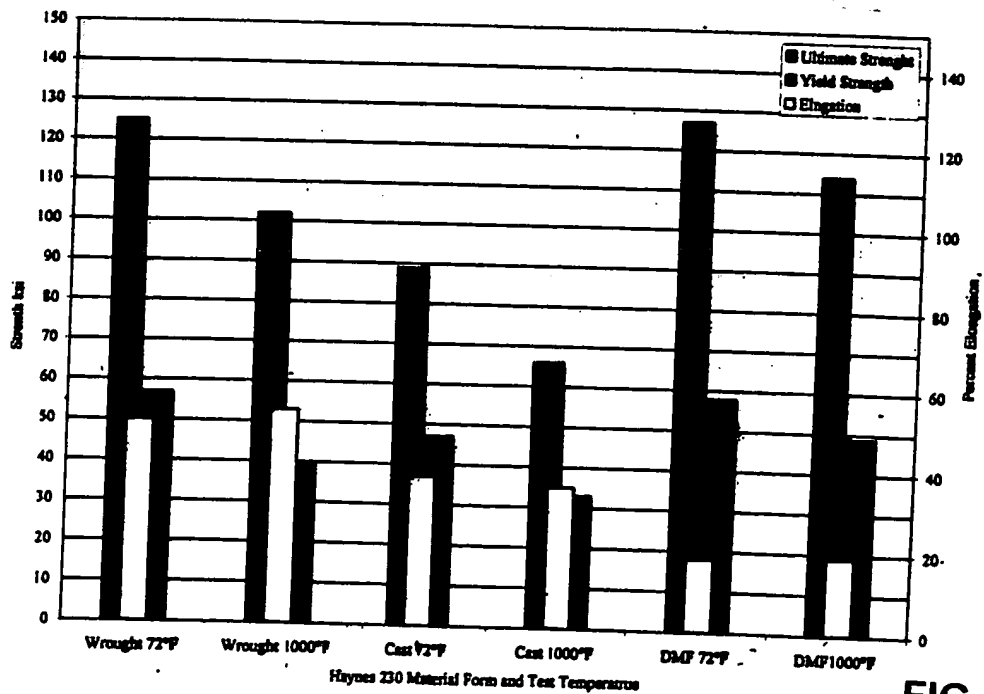


FIG 7
Comparison of DMF Alloy 230, cast and wrought Haynes 230 properties